NEXCOM International Co., Ltd.

Industrial Computing Solutions

Embedded Computing (3.5” CPU Board)

EBC 353

User Manual

NEXCOM International Co., Ltd.
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PREFACE

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Acknowledgements

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Regulatory Compliance Statements

This section provides the FCC compliance statement for Class B devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

RoHS Compliance

NEXCOM RoHS Environmental Policy and Status Update

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RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How to recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2006 will be RoHS compliant. They will use the usual NEXCOM naming convention.

Warranty and RMA

NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM. HCP series products (Blade Server) which are manufactured by NEXCOM are covered by a three year warranty period.

NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the "NEXCOM RMA Service Form" with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the "NEXCOM RMA Service Form" for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as "Out of Warranty."
- Any products returned by NEXCOM to other locations besides the customers' site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

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Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

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Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

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Safety Precautions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.

7. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.

8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.

10. All cautions and warnings on the equipment should be noted.

11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

12. Never pour any liquid into an opening. This may cause fire or electrical shock.

13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

14. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.

15. Do not place heavy objects on the equipment.

16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.

17. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

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Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at www.nexcom.com.

2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
   - Product name and serial number
   - Detailed information of the peripheral devices
   - Detailed information of the installed software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.

2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

3. CompactFlash: Turn off the unit's power before inserting or removing a CompactFlash storage card.

Conventions Used in this Manual

Warning:
Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.

Caution:
Information to avoid damaging components or losing data.

Note:
Provides additional information to complete a task easily.

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Package Contents

Before continuing, verify that the EBC 353 package that you received is complete. Your package should have all the items listed in the following table.

EBC 353 Cable Kit (P/N: 10E00035302X0)

Item	Part Number	Name	Description	Qty
1	60233ATA73X00	SATA CABLE ACMELUX:19922413	STANDARD L:300mm	1
2	60233DVI18X00	DVI CABLE DVI-I TO DVI-I&D-SUB EDI:2A1292250101-RS	DVI Y CABLE DVI-I TO DVI-I L:100mm&D-SUB L:105mm	1
3	60233PS203X00	EBC563IO PS2 KB/MS CABLE EDI:201061080201-RS	PS2 TO JST 8PIN 2.54mm L:200mm+-10mm	1
4	60233PW148X00	SATA POWER CABLE BEST:901-0405-300R	HOUSING 4P TO HOUSING 5P L:300mm	1
5	60233SIO62X00	COMFORT CABLE CP:NEX-110819-01	UL2651 #28x9C-DB9+TU1001-10 L:200mm	2
6	60233USB59X00	USB CABLE EDI:262082060204-RS	DUAL PORT USB CON TO JST 6PIN 2.0mm L:200+-10mm	1

EBC 353/354 CPU Cooler (P/N: 10E00035301X0)

Item	Part Number	Name	Description	Qty
1	5044440090X00	(H) THERMAL PAD APUS: 3A2015001001500	15x10x1.5mm XR-PE	1
2	5050300435X00	CPU HEATSINK FOR EBC352 SHYUNG SHUHN	58x40x37mm 5800RPM 12V 2510 3PIN L:120mm	1

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Ordering Information

The following information below provides ordering information for EBC 353.

EBC353-2550 (P/N: 10E00035303X0) RoHS Compliant

Low power Embedded Board with Intel® Atom™ D2550 processor and based on Intel® integrated graphics engine w/ VGA/ 18-bit LVDS/ 6x USB2.0/ 4x COMs/ 1x Mini-PCIe/ 2x Gigabit LAN/ 2x SATA/ 1x PCI-104

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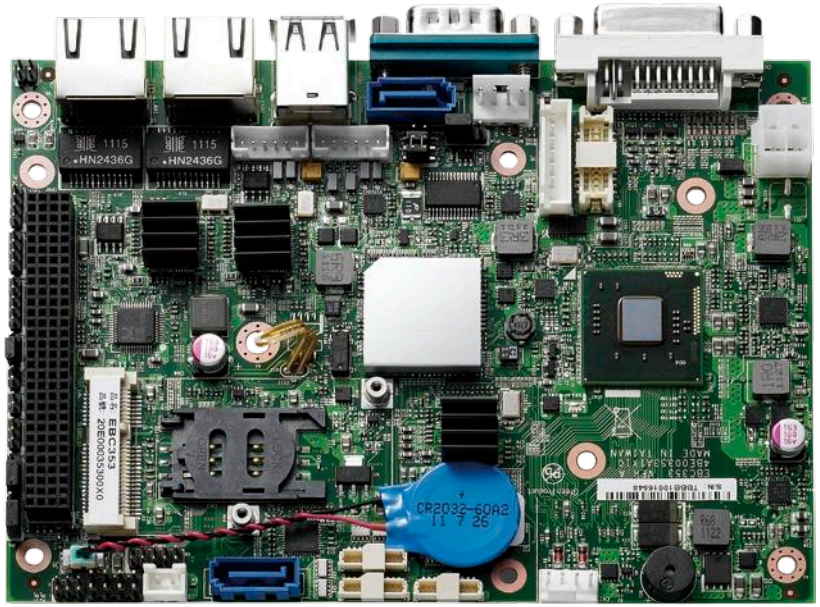
Chapter 1: Product Introduction

Overview



Key Features

- Onboard Intel® Atom™ processor D2550 1.86GHz CPU
- Intel® NM10 Express chipset
- One 204-pin SO-DIMM socket supports up to 4 GB DDR3 800/1066 MHz SDRAM
- Display: VGA & DVI-D & LVDS (1x DF13 20-pin 18-bit Single channel)
- 1x Mini-PCIe
- 1x PCI-104
- 2x Intel 82574L PCI Express Gigabit Ethernet
- 2x SATA
- 6x USB, 4-in/4-out GPIO, Mic-in, Line-out, Speaker-out
- Serial port: 3x RS232, 1x RS232/422/485 port
- Support AT/ATX mode and Single +12V DC input

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Hardware Specifications

CPU Support

- Intel® Atom™ processor D2550 1.86GHz CPU

Main Memory

- One 204-pin SO-DIMM socket supports up to 4 GB DDR3 800/1066 MHz SDRAM

Chipset

- Intel® NM10 Express chipset

BIOS

- AMI BIOS
- Plug & Play support
- Advanced Power Management
- Advanced Configuration & Power Interface
- 8M bits SPI ROM

On-board LAN

- 2x Intel® PCI Express Gigabit Ethernet
- Support Boot From LAN (PXE)
- 2x RJ45 with LED

Display

- Intel® Atom™ processor D2550 integrated 3D graphics engine, which enhances Gfx & Video, support DX10.1, OpenGL 3.0, Full HD Decode (MPEG2,VC1,AVC,H.264), delivers sophisticated graphics for large display application, dual independent display support at graphics base frequency up to 640MHz, and provides a wealth of options for high-resolution displays
- Analog VGA interface
  - 1x VGA within DVI-I connector
  - resolution up to 1920x1200 75Hz
- DVI interface
  - 1x DVI-I connector
  - Resolution up to 1920x1200
- LVDS interface
  - Single (24bit) LVDS panel, resolution up to 1440 x 900 DF13 20-pin LVDS connector for internal connection
- CCFL interface
  - 1x CCFL for LCD Panel Backlight Inverter (Analog/ PWM dimming support)

Audio

- Realtek ALC886 CODEC for High Definition
- 1x Mic-in and 1x Line-out Pin header

Expansion

- 1x Mini-PCIe
- 1x PCI-104

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I/O Interface

- Serial port: 4 ports
  - COM1 support RS232 with DB9 connector
  - COM2 support RS232/422/485 with 10-pin box connector
  - COM3,4 support RS232 with 10-pin box connector
- USB 2.0: 6 ports
  - 2 ports edge connector
  - 4 ports by 2.0mm JST connector
- 8 GPIO lines via header (GPI 0~3 and GPO0~3) TTL Level (0/5 V)
- On-board Power LED and HDD Active LED Pin Header
- 1x 4-pin fan connector (for CPU)
- 1x Keyboard/Mouse pin header
- On board Buzzer/SMBus2.0/Reset SW/On & Off switch button

Edge I/O Interface

- 1x DVI-I connector
- 1x COM1 support RS232 with DB9 connector
- 1x dual stack USB connector
- 2x RJ45 with LED connector

Watchdog Timer

- Watchdog timeout can be programmed by software from 1 second to 255 seconds, and from 1 minute to 255 minutes (Tolerance 15% under room temperature of 25°C).

Storage

- 2x SATA port

System Monitor

- Monitoring of 4 voltages and 2 temperatures
- 4 Voltage (Vcore, +12V , +3.3V , 5V)
- 2 Temperatures (CPU, System)
- 1 Fan Speed detection

On-board RTC

- On-chip RTC with battery backup
- 1x External Li-Ion battery

Power Input

- Support AT and ATX mode

Power Requirements

- Power requirement: +12V DC Input
- One 4-pin power connector

Dimensions

- 3.5" ECX form factor/146mm (L) x 105mm (W) (5.7"x4.1")

Environment

- Operating temperatures: 0°C to 60°C
- Storage temperature: -20°C to 85°C
- Relative humidity: Operating 10% to 90%, non-condensing

Certifications

- CE approval
- FCC Class A

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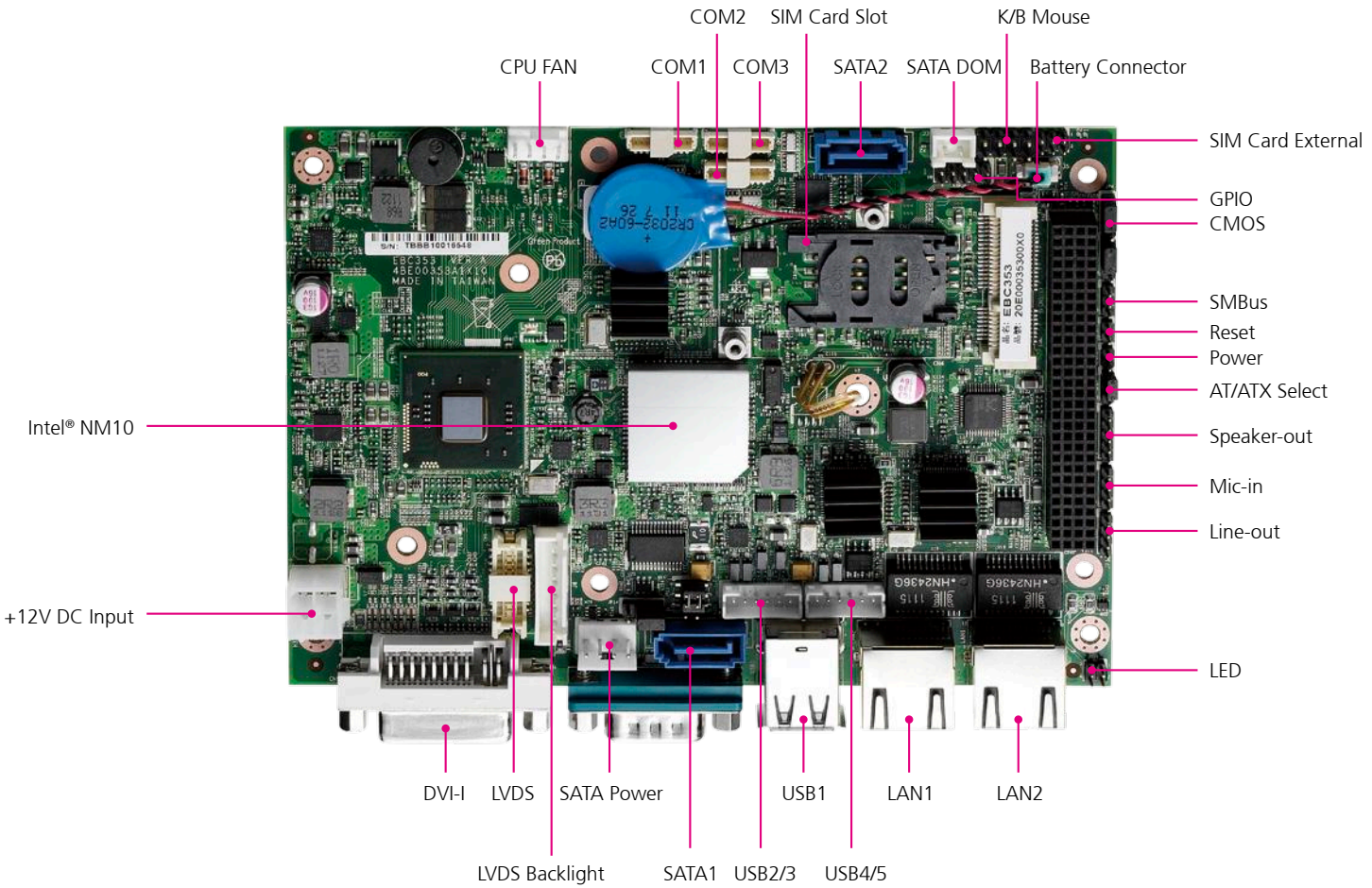
Knowing Your EBC 353



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Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the EBC 353 motherboard.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

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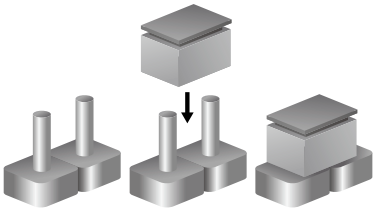
Jumper Settings

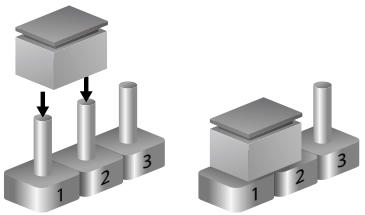
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)



Three-Pin Jumpers: Pins 1 and 2 are Short



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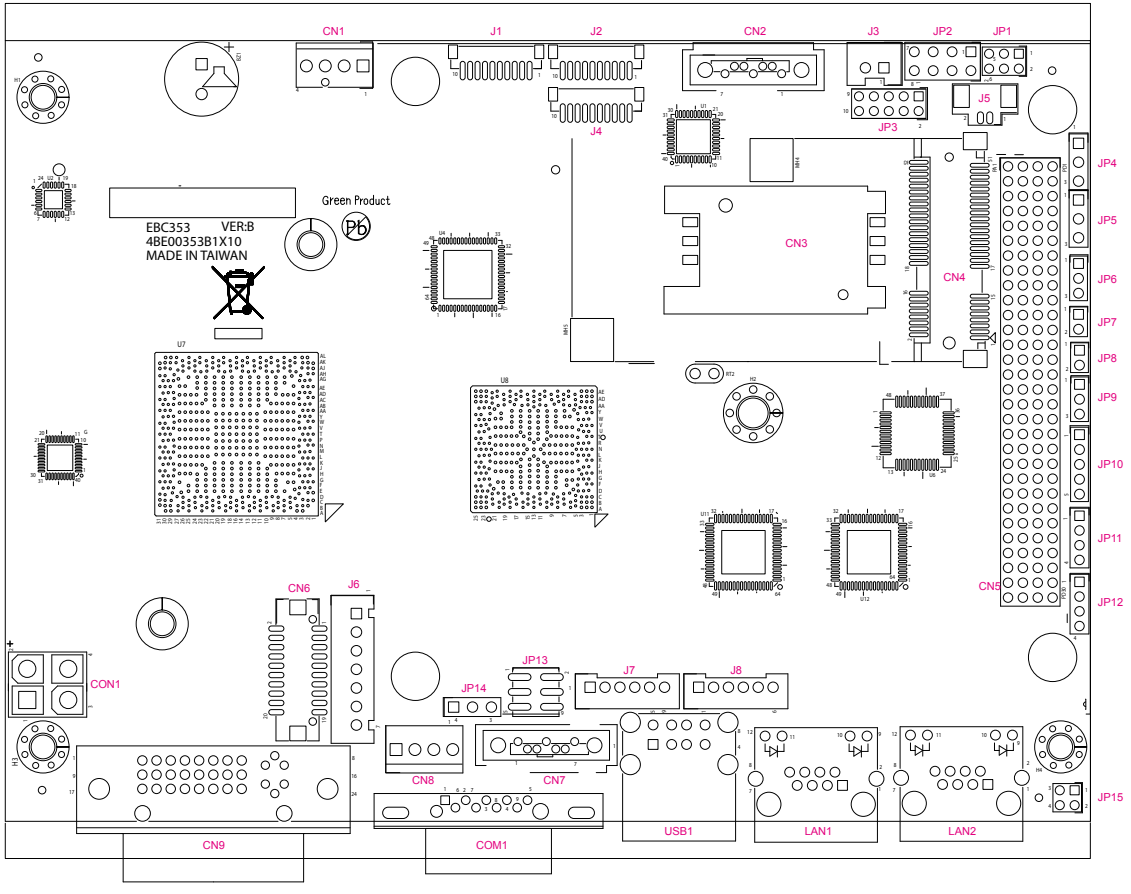
Locations of the Jumpers and Connectors

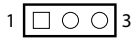
The figure below shows the location of the jumpers and connectors.



Jumpers

CMOS Clear Select

Connector type: 1x3 3-pin header
Connector location: JP4



Pin	Settings
1-2 On	Normal
2-3 On	Clear BIOS

1-2 On: default

Pin	Definition
1	NC
2	I_RTCRST#
3	GND

Power Mode Select

Connector type: 1x3 3-pin header
Connector location: JP9

Pin	Settings
1-2 On	AT
2-3 On	ATX

1-2 On: default

Pin	Definition
1	I_PWRBT#
2	AT_PWRBT#
3	ATX_BOT

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LVDS Power Select

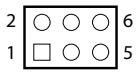
Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP14

Pin	Definition
1	VCC3
2	PANEL1_VDD
3	VCC5

1-2 On: default

Panel Backlight Control Mode

Connector type: 2x3 6-pin header, 2.54mm pitch
Connector location: JP13



Pin	Definition
1	CCFLBKLTCTRL
2	CCFL_PWM
3	PL_BKLTCTRL
4	CCFLBKLTCTRL
5	P_BKLTCTRL
6	PWM_DUTY

1-3 On: Analog signal output for dimming control. (default)

3-5 On: PWM signal output for dimming control.

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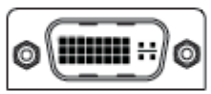
Connector Pin Definitions

External I/O Interfaces

DVI-I

Connector type: 1x3 3-pin header
Connector location: JP4

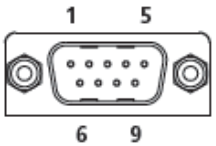


DVI

Pin	Definition	Pin	Definition
1	CH_TX2_N	2	CH_TX2_P
3	DVI_I_GND	4	NC
5	NC	6	DVI_I_DDC_C
7	DVI_I_DDC_D	8	VSYNC_VGA
9	CH_TX1_N	10	CH_TX1_P
11	DVI_I_GND	12	NC
13	NC	14	DVI_I_5V
15	DVI_I_GND	16	HPDET_I
17	CH_TX0_N	18	CH_TX0_P
19	DVI_I_GND	20	DDCCLK_VGA
21	DDCDATA_VGA	22	DVI_I_GND
23	CH_CLK_P	24	CH_CLK_N
C1	RED_VGA	C2	GREEN_VGA
C3	BLUE_VGA	C4	HSYNC_VGA
C5A	VGADET	C5B	CRT_GND
MH1	CHASIS_GND	MH2	CHASIS_GND

COM1 Serial Port

Connector type: DB-9 port
Connector location: COM1



Pin	Definition	Pin	Definition
1	SP1_DCD	2	SP1_RXD
3	SP1_TXD	4	SP1_DTR
5	GND	6	SP1_DSR
7	SP1_RTS	8	SP1_CTS
9	SP1_RI		

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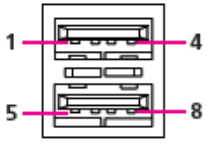
USB0/1 Ports

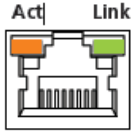
Connector type: Dual USB port, Type A
Connector location: USB1



Pin	Definition	Pin	Definition
1	P5V_USB_P01	2	USBCON_0N
3	USBCON_0P	4	GND
5	P5V_USB_P01	6	USBCON_1N
7	USBCON_1P	8	GND
MH1	USB1_MTH_GND	MH2	USB1_MTH_GND
MH3	USB1_MTH_GND	MH4	USB1_MTH_GND

LAN1 Port

Connector type: RJ45 port with LEDs
Connector location: LAN



Pin	Definition	Pin	Definition
1	LAN1M0P	2	LAN1M0N
3	LAN1M1P	4	LAN1M2P
5	LAN1M2N	6	LAN1M1N
7	LAN1M3P	8	LAN1M3N
9	LAN1_LEDACT#	10	LAN1_ACTPW
11	LAN1_LINK100#	12	LAN1_LINK1G#
MH1	CHASIS_GND	MH2	CHASIS_GND

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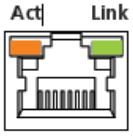
LAN2 Port

Connector type: RJ45 port with LEDs
Connector location: LAN2



Pin	Definition	Pin	Definition
1	LAN2M0P	2	LAN2M0N
3	LAN2M1P	4	LAN2M2P
5	LAN2M2N	6	LAN2M1N
7	LAN2M3P	8	LAN2M3N
9	LAN2_LEDACT#	10	LAN2_ACTPW
11	LAN2_LINK100#	12	LAN2_LINK1G#
MH1	CHASIS_GND	MH2	CHASIS_GND

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Internal Connectors

SMBus Connector

Connector type: 1x3 3-pin header 2.00mm-M-180
Connector location: JP6

Pin	Definition
1	SMBCLK_MAIN
2	SMBDATA_MAIN
3	GND

Reset Button Connector

Connector type: 1x2 2-pin header, 2.00mm pitch
Connector location: JP7

Pin	Definition
1	I_SYSRST#
2	GND

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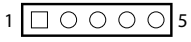
Power Button Connector

Connector type: 1x2 2-pin header, 2.00mm pitch
Connector location: JP8

Pin	Definition
1	ATX_BOT
2	GND

Speaker-out Connector

Connector type: 1x5 5-pin header, 2.0mm pitch
Connector location: JP10



Pin	Definition
1	FRONT_L+
2	FRONT_L-
3	AGND
4	FRONT_R+
5	FRONT_R

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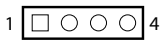
Mic-in Connector

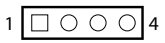
Connector type: 1x4 4-pin header, 2.0mm pitch
Connector location: JP11



Pin	Definition
1	MIC_L3
2	AGND
3	MIC_JD
4	LOUT_R3

Line-out Connector

Connector type: 1x4 4-pin header, 2.0mm pitch
Connector location: JP12



Pin	Definition
1	LOUT_L2
2	AGND
3	EXLINEOUT_JD
4	LOUT_R2

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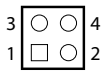
LED Connector

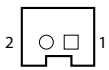
Connector type: 2x2 4-pin header, 2.0mm pitch
Connector location: JP15



Pin	Definition
1	PWRLEDP
2	GND
3	HDDLEDP
4	GND

SATA DOM Power Connector

Connector type: 1x4 4-pin header, 2.0mm pitch
Connector location: JP12



Pin	Definition
1	VCC5
2	GND

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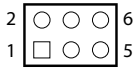
SIM Card External Connector

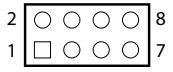
Connector type: 2x3 6-pin header, 2.0mm pitch
Connector location: JP1



Pin	Definition
1	UIM_PWR
2	GND
3	UIM_RESET
4	UIM_VPP
5	UIM_CLK
6	UIM_DATA

PS/2 Keyboard/Mouse Connector

Connector type: 2x4 8-pin header, 2.54mm
Connector location: JP2



Pin	Definition
1	5V_KB
2	5V_KB
3	KDAT_R
4	MDAT_R
5	KCLK_R
6	MCLK_R
7	KBMS_GND
8	KBMS_GND

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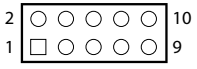
GPIO Connector

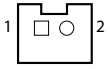
Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: JP3



Pin	Definition
1	VCC5
2	GND
3	SIO_GPO24
4	SIO_GPI20
5	SIO_GPO25
6	SIO_GPI21
7	SIO_GPO26
8	SIO_GPI22
9	SIO_GPO27
10	SIO_GPI23

Battery Connector

Connector type: 1x2 JST, 2-pin header, 2.5mm pitch
Connector location: J5



Pin	Definition
1	GND
2	BAT_C

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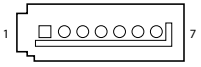
SATA1 Connector

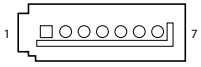
Connector type: Standard Serial ATAII 7P (1.27mm, SATA-M-180)
Connector location: CN7



Pin	Definition
1	GND
2	SATA_TXP0_C
3	SATA_TXN0_C
4	GND
5	SATA_RXN0_C
6	SATA_RXP0_C
7	GND

SATA2 Connector

Connector type: Standard Serial ATAII 7P (1.27mm, SATA-M-180)
Connector location: CN2



Pin	Definition
1	GND
2	SATA_TXP1_C
3	SATA_TXN1_C
4	GND
5	SATA_RXN1_C
6	SATA_RXP1_C
7	GND

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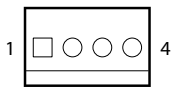
SATA Power Connector

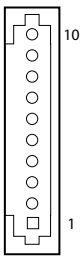
Connector type: 1x4 4-pin Wafer, 2.54mm pitch
Connector location: CN8



Pin	Definition
1	+12V
2	GND
3	GND
4	VCC5

COM2 Connector

Connector type: 1x10 10-pin header, 1.0mm pitch
Connector location: J4



Pin	Definition	Pin	Definition	Pin	Definition
1	SP2_DCD	2	SP2_RXD	3	SP2_TXD
4	SP2_DTR	5	GND	6	SP2_DSR
7	SP2_RTS	8	SP2_CTS	9	SP2_RI
10	GND				

RS422 Pin Definition

Pin	Definition	Pin	Definition	Pin	Definition
1	TXD-	2	TXD+	3	RXD+
4	RXD-	5	GND	6	RTS-
7	RTS+	8	CTS+	9	CTS-

RS485 Pin Definition

Pin	Definition	Pin	Definition	Pin	Definition
1	TXD-	2	TXD+	3	Reserve
	RXD-		RXD+	4	Reserve
5	Reserve	6	Reserve	7	Reserve
8	Reserve	9	Reserve		

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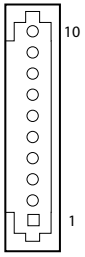
COM3 Connector

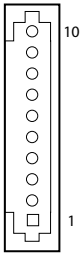
Connector type: 1x10 10-pin header 1.0mm pitch
Connector location: J2



Pin	Definition
1	SP3_DCD
2	SP3_RXD
3	SP3_TXD
4	SP3_DTR
5	GND
6	SP3_DSR
7	SP3_RTS
8	SP3_CTS
9	SP3_RI
10	GND

COM4 Connector

Connector type: 1x10 10-pin header, 1.0mm pitch
Connector location: J1



Pin	Definition
1	SP4_DCD
2	SP4_RXD
3	SP4_TXD
4	SP4_DTR
5	GND
6	SP4_DSR
7	SP4_RTS
8	SP4_CTS
9	SP4_RI
10	GND

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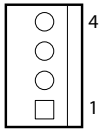
CPU Fan Connector

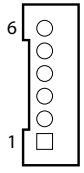
Connector type: 1x4 4-pin Wafer, 2.54mm pitch
Connector location: CN8



Pin	Definition
1	GND
2	+12V
3	CPUFANIN_R
4	CPUFANOUT_R

USB2/3 JST Connector

Connector type: 1x10 10-pin header, 1.0mm pitch
Connector location: J4



Pin	Definition
1	P5V_USB_P23
2	USBCON_2N
3	USBCON_2P
4	USBCON_3N
5	USBCON_3P
6	GND

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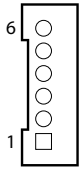
USB4/5 JST Connector

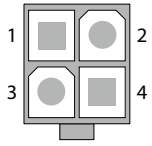
Connector type: 1x6 6-pin header, 2.0mm pitch
Connector location: J8



Pin	Definition
1	P5V_USB_P45
2	USBCON_4N
3	USBCON_4P
4	USBCON_5N
5	USBCON_5P
6	GND

ATX Power Output Connector

Connector type: 2x2 Aux power connector
Connector location: CON1



Pin	Definition
1	GND
2	GND
3	+12V
4	+12V

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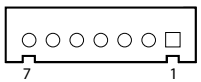
LVDS Backlight Connector

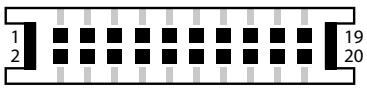
Connector type: 1x7 JST, 7-pin header, 2.5mm pitch
Connector location: J6



Pin	Definition
1	VCC5
2	V_INV(+12V)
3	V_INV(+12V)
4	BKLTCTRL
5	GND
6	GND
7	M_BKLTEN_R

LVDS Connector

Connector type: 2x10 20-pin header, 1.25mm pitch
Connector location: CN6



Pin	Definition	Pin	Definition
1	M_LVDSDDCCLK	2	M_LVDSDDCDATA
3	VCC_LCD	4	LVDS_CH_TX0_P
5	LVDS_CH_TX3_P	6	LVDS_CH_TX0_N
7	LVDS_CH_TX3_N	8	VCC_LCD
9	GND	10	LVDS_CH_TX1_P
11	LVDS_CH _CLK_P	12	LVDS_CH_TX1_N
13	LVDS_CH _CLK_N	14	GND
15	GND	16	V_INV(+12V)
17	LVDS_CH_TX2_P	18	V_INV (+12V)
19	LVDS_CH_TX2_N	20	GND
MH1	GND	MH2	GND

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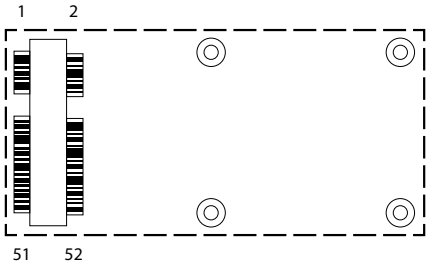
Mini-PCIe Slot

Connector location: CN4



Pin	Definition	Pin	Definition
1	I_WAKE#	2	+3VSB_MINI1
3	NC	4	GND
5	NC	6	1V5
7	MINICARD1CLKREQ#	8	NC
9	GND	10	NC
11	G_MINIPCIECLKN	12	NC
13	G_MINIPCIECLKN	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	MINICARD1DIS#
21	GND	22	I_SLOTPLTRST#
23	I_PERXN3	24	+3VSB_MINI1
25	I_PERXP3	26	GND

Pin	Definition	Pin	Definition
27	GND	28	1V5
29	GND	30	SMB_CLK
31	I_PETXN3_C	32	SMB_DATA
33	I_PETXP3_C	34	GND
35	GND	36	MINI1USBN
37	GND	38	MINI1USBP
39	+3VSB_MINI1	40	GND
41	+3VSB_MINI1	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	1V5
49	NC	50	GND
51	NC	52	+3VSB_MINI1

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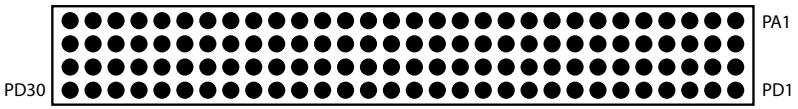
PCI Slot

Connector type: 120-pin H:9.6mm 180D GOLD FLASH DIP 5V
Connector location: CN5



Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
PA1	GND	PB1	NC	PC1	VCC5	PD1	PCIAD0
PA2	VIO	PB2	PCIAD2	PC2	PCIAD1	PD2	VCC5
PA3	PCIPCIAD5	PB3	GND	PC3	PCIAD4	PD3	PCIAD3
PA4	PCICBE#0	PB4	PCIAD7	PC4	GND	PD4	PCIAD6
PA5	GND	PB5	PCIAD9	PC5	PCIAD8	PD5	GND
PA6	PCIPCIAD11	PB6	VIO	PC6	PCIAD10	PD6	GND
PA7	PCIAD14	PB7	PCIAD13	PC7	GND	PD7	PCIAD12
PA8	VCC3	PB8	PCICBE#1	PC8	PCIAD15	PD8	VCC3
PA9	SERR#	PB9	GND	PC9	NC	PD9	PAR
PA10	GND	PB10	PERR#	PC10	VCC3	PD10	NC
PA11	STOP#	PB11	VCC3	PC11	LOCK#	PD11	GND
PA12	VCC3	PB12	TRDY#	PC12	GND	PD12	DEVSEL#
PA13	FRAME#	PB13	GND	PC13	IRDY#	PD13	VCC3
PA14	GND	PB14	PCIAD16	PC14	VCC3	PD14	PCICBE#2
PA15	PCIAD18	PB15	VCC3	PC15	PCIAD17	PD15	GND

Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
PA16	PCIAD21	PB16	PCIAD20	PC16	GND	PD16	PCIAD19
PA17	VCC3	PB17	PCIAD23	PC17	PCIAD22	PD17	VCC3
PA18	IDSEL0	PB18	GND	PC18	IDSEL1	PD18	IDSEL2
PA19	PCIAD24	PB19	PCICBE#3	PC19	VIO	PD19	IDSEL3
PA20	GND	PB20	PCIAD26	PC20	PCIAD25	PD20	GND
PA21	PCIAD29	PB21	VCC5	PC21	PCIAD28	PD21	PCIAD27
PA22	VCC5	PB22	PCIAD30	PC22	GND	PD22	PCIAD31
PA23	REQ#0	PB23	GND	PC23	REQ#1	PD23	VIO
PA24	GND	PB24	REQ#2	PC24	VCC5	PD24	GNT0
PA25	GNT#1	PB25	VIO	PC25	GNT2	PD25	GND
PA26	VCC5	PB26	PCICLK0	PC26	GND	PD26	PCICLK1
PA27	PCICLK2	PB27	VCC5	PC27	PCICLK3	PD27	GND
PA28	GND	PB28	IRQD	PC28	VCC5	PD28	PCIRST#
PA29	+12V	PB29	IRQA	PC29	IRQB	PD29	IRQC
PA30	-12V	PB30	REQ#3	PC30	GNT3	PD30	GND

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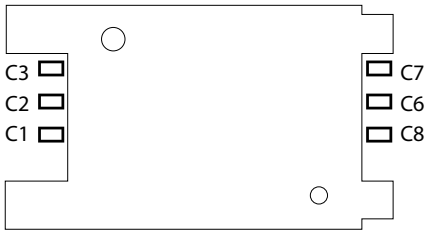
Sim Card Holder

Connector location: CN3



Pin	Definition
C1	UIM_PWR
C2	UIM_RESET
C3	UIM_CLK
C4	GND
C5	UIM_VPP
C6	UIM_DATA

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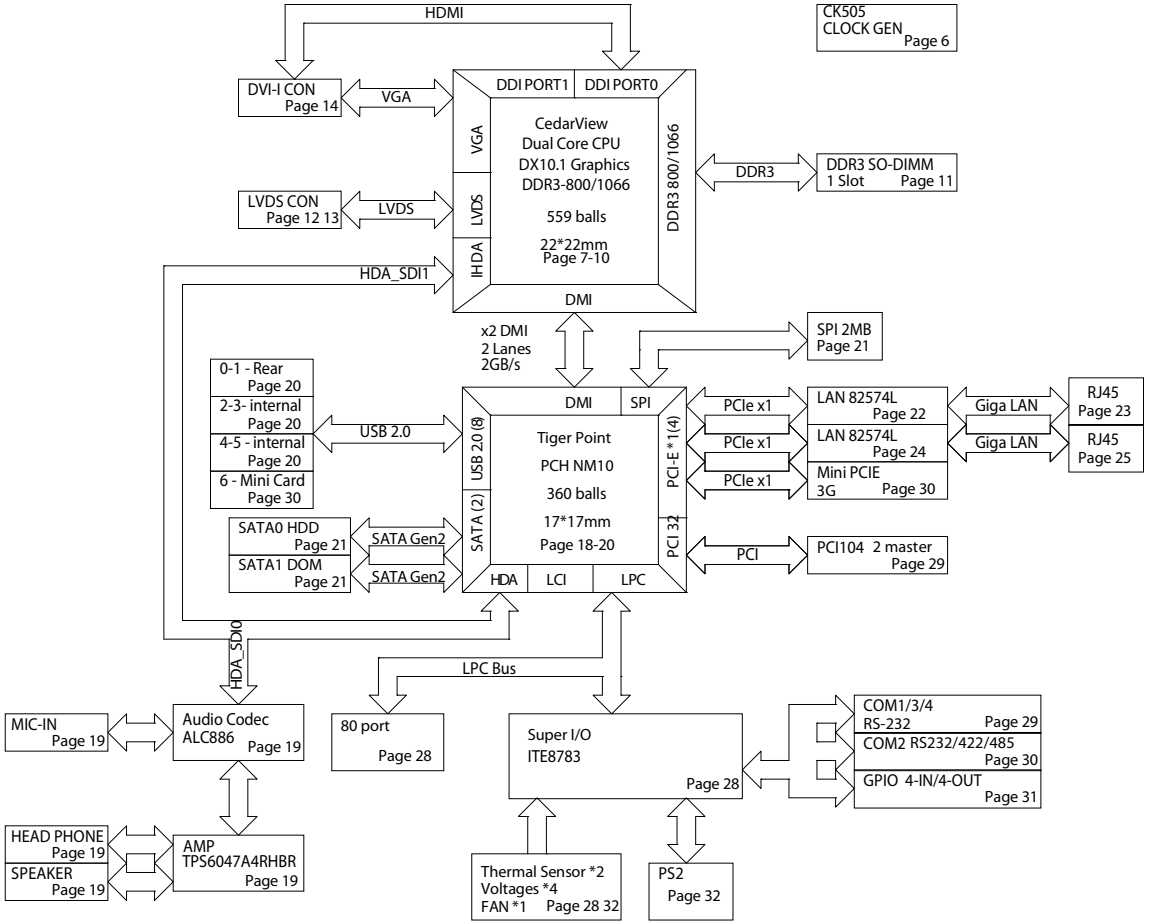
Block Diagram



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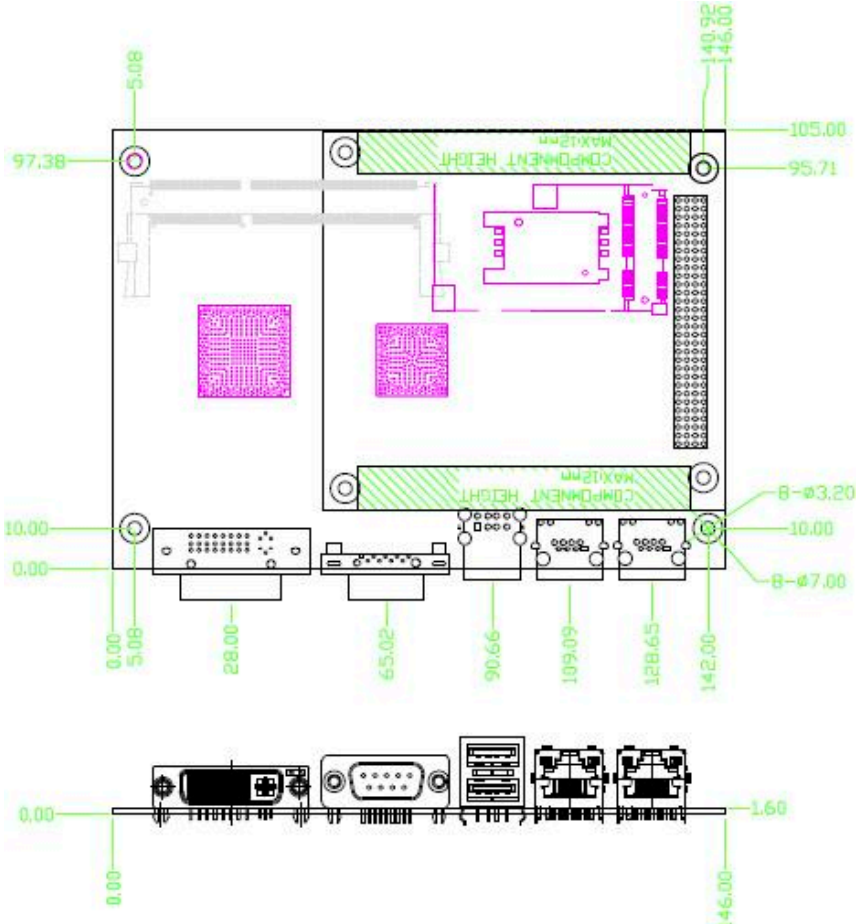
Board Dimensions



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Chapter 3: BIOS Setup

This chapter describes how to use the BIOS setup program for the EBC 353. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM Web site at www.nexcom.com.tw.

About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

When to Configure the BIOS

- This program should be executed under the following conditions:
- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

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Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <Del> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

TO ENTER SETUP BEFORE BOOT PRESS Ctrl + Alt + Esc

Press the Del key to enter Setup:

Legends

Key	Function
← →	Moves the highlight left or right to select a menu.
↑ ↓	Moves the highlight up or down between sub¬menus or fields.
Esc	Exits the BIOS Setup Utility.
+	Scrolls forward through the values or options of the highlighted field.
–	Scrolls backward through the values or options of the highlighted field.
Tab	Selects a field.
F1	Displays General Help.
F2	Load previous values.
F3	Load optimized default values.
F4	Saves and exits the Setup program.
Enter	Press <Enter> to enter the highlighted sub¬menu

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Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When "▶" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press Enter.

BIOS Setup Utility

- Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press Enter to accept or enter the submenu.

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

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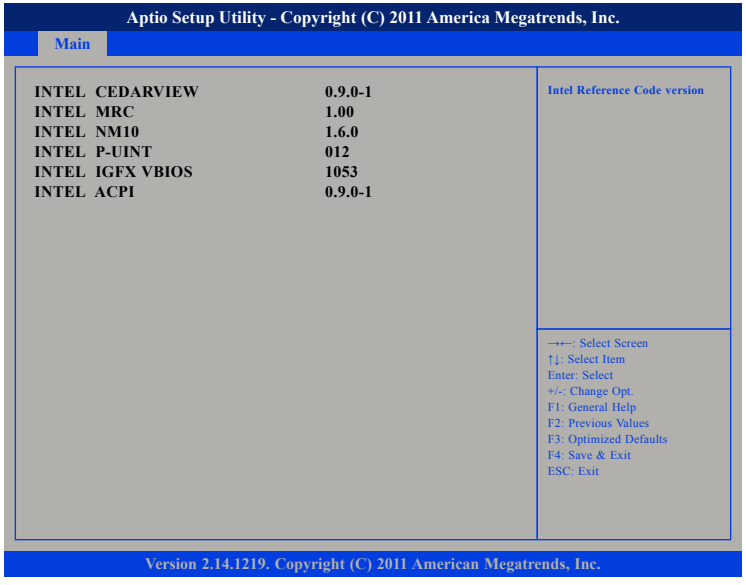
Intel RC Version

Displays the Intel Reference Code version.



System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Access Level

Displays the access level of the current user in the BIOS.

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Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Setting incorrect field values may cause the system to malfunction.

Launch LAN1/2 PXE OpROM

Enables or disables the boot option for legacy network devices connected to LAN1 and LAN2.

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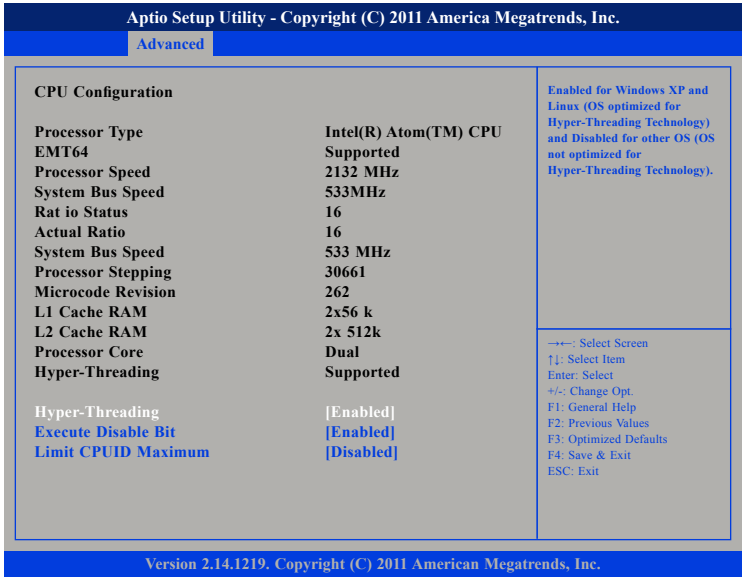
CPU Configuration

This section is used to configure the CPU.


Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
CPU Configuration
Processor Type Intel(R) Atom(TM) CPU
EMT64 Supported
Processor Speed 2132 MHz
System Bus Speed 533MHz
Rat io Status 16
Actual Ratio 16
System Bus Speed 533 MHz
Processor Stepping 30661
Microcode Revision 262
L1 Cache RAM 2x56 k
L2 Cache RAM 2x 512k
Processor Core Dual
Hyper-Threading Supported
Hyper-Threading [Enabled]
Execute Disable Bit [Enabled]
Limit CPUID Maximum [Disabled]
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Hyper-threading

Disable or Enable hyper-threading technology.

Execute Disable Bit

When this field is set to Disabled, it will force the XD feature flag to always return to 0. XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3).

Limit CPUID Maximum

The CPUID instruction of some newer CPUs will return a value greater than 3. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, enable this field to limit the return value to 3 or lesser than 3.

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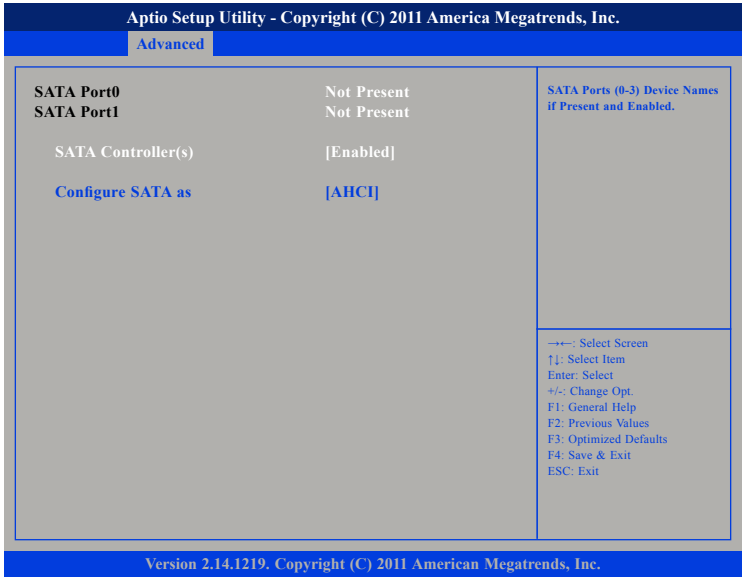
IDE Configuration

This section is used to configure the IDE drives.


Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
SATA Port0 Not Present
SATA Port1 Not Present
SATA Controller(s) [Enabled]
Configure SATA as [AHCI]
SATA Ports (0-3) Device Names if Present and Enabled.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Configure SATA As

IDE This option configures the Serial ATA drives as Parallel ATA physical storage device.

RAID This option allows you to create RAID or Intel Matrix Storage configuration on Serial ATA devices.

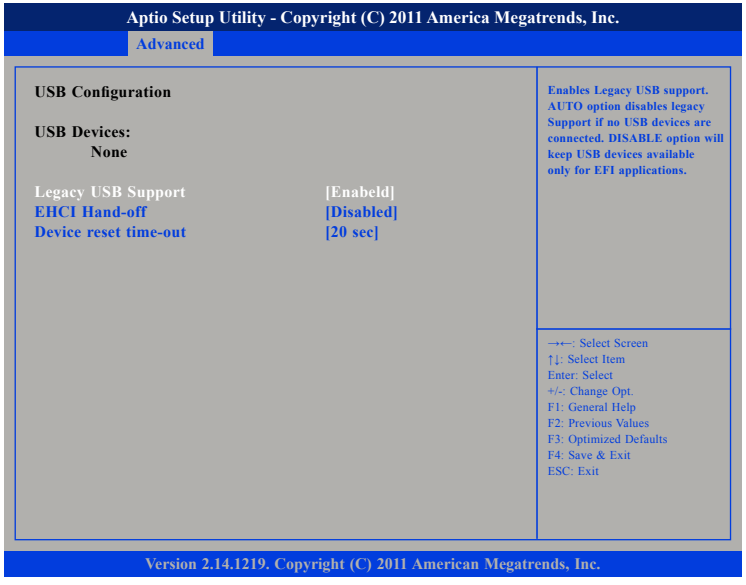
AHCI This option configures the Serial ATA drives to use AHCI (Advanced Host Controller Interface). AHCI allows the storage driver to enable the advanced Serial ATA features which will increase storage performance.

SATA Controller(s)

Enables or disables SATA ports 0-3.

USB Configuration

This section is used to configure the USB.


Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
USB Configuration
USB Devices:
None
Legacy USB Support [Enabeld]
EHCI Hand-off [Disabled]
Device reset time-out [20 sec]
Enables Legacy USB support. AUTO option disables legacy Support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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USB Configuration

Displays the detected USB devices.

Legacy USB Support

Enable Enables Legacy USB.

Auto Disables support for Legacy when no USB devices are connected.

Disable Keeps USB devices available only for EFI applications.

EHCI Hand-Off

This is a workaround for OSs that does not support EHCI hand-off. The EHCI ownership change should be claimed by the EHCI driver.

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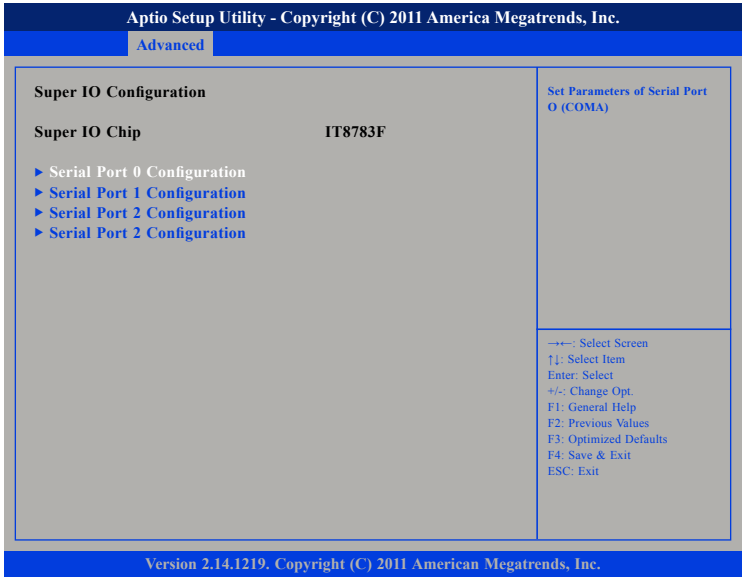
Super IO Configuration

This section is used to configure the serial ports.


Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
Super IO Configuration
Super IO Chip IT8783F
▸ Serial Port 0 Configuration
▸ Serial Port 1 Configuration
▸ Serial Port 2 Configuration
▸ Serial Port 2 Configuration
Set Parameters of Serial Port O (COMA)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Super IO Chip

Displays the Super I/O chip used on the board.

Serial Port 0 Configuration

This section is used to configure serial port 0.

Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
Serial Port 0 Configuration
Serial Port [Enabled]
Device Settings IO=3F8h; IRQ=4;
Change Settings [IO=3F8h; IRQ=4;]
Onboard Serial Port Max Baud Rate [115200 bps]
Enable or Disable Serial Port (COM)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Serial Port

Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Onboard Serial Port Max Baud Rate

Select this to change the max baud rate of the serial port.

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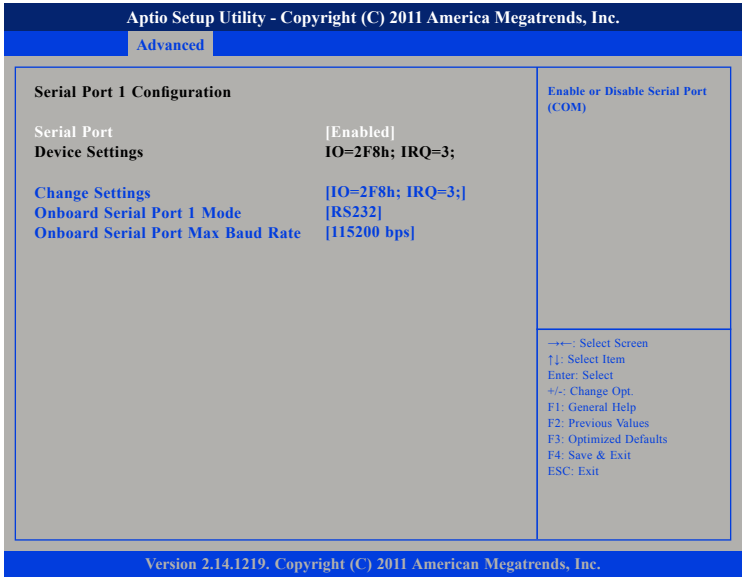
Serial Port 1 Configuration

This section is used to configure serial port 1.


Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
Serial Port 1 Configuration
Serial Port [Enabled]
Device Settings IO=2F8h; IRQ=3;
Change Settings [IO=2F8h; IRQ=3;]
Onboard Serial Port 1 Mode [RS232]
Onboard Serial Port Max Baud Rate [115200 bps]
Enable or Disable Serial Port (COM)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Serial Port
Enables or disables the serial port.

Change Settings
Selects an optimal setting for the Super IO device.

Onboard Serial Port 1 Mode
Select this to change the serial port mode to RS232, RS422 or RS485.

Onboard Serial Port Max Baud Rate
Select this to change the max baud rate of the serial port.

Serial Port 2 Configuration

This section is used to configure serial port 2.

Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
Serial Port 2 Configuration
Serial Port [Enabled]
Device Settings IO=3F8h; IRQ=7;
Change Settings [IO=3F8h; IRQ=7;]
Onboard Serial Port Max Baud Rate [115200 bps]
Enable or Disable Serial Port (COM)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Serial Port
Enables or disables the serial port.

Change Settings
Selects an optimal setting for the Super IO device.

Onboard Serial Port Max Baud Rate
Select this to change the max baud rate of the serial port.

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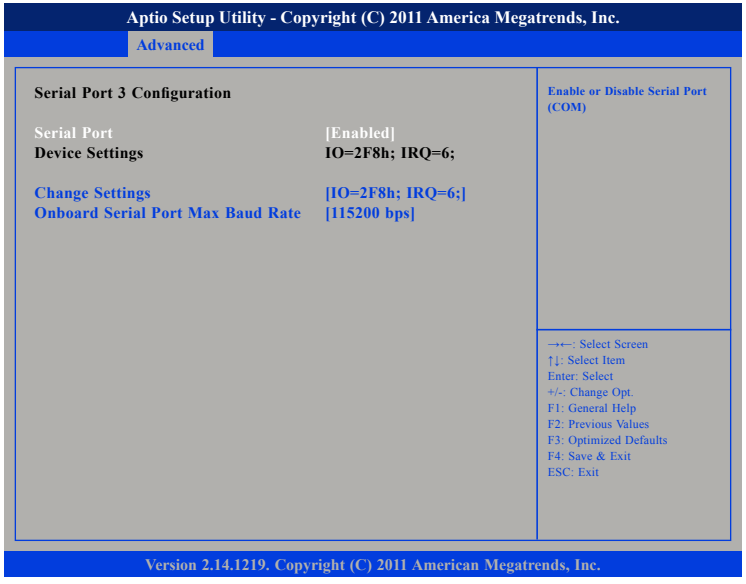
Serial Port 3 Configuration

This section is used to configure serial port 3.


Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
Serial Port 3 Configuration
Serial Port [Enabled]
Device Settings IO=2F8h; IRQ=6;
Change Settings [IO=2F8h; IRQ=6;]
Onboard Serial Port Max Baud Rate [115200 bps]
Enable or Disable Serial Port (COM)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Serial Port

Enables or disables the serial port.

Change Settings

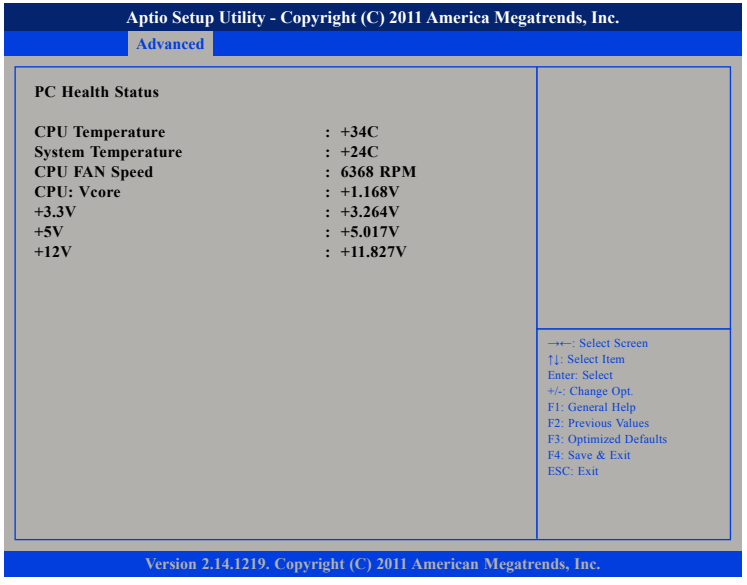
Selects an optimal setting for the Super IO device.

Onboard Serial Port Max Baud Rate

Select this to change the max baud rate of the serial port.

H/W Monitor

This section is used to monitor hardware status such as temperature, fan speed and voltages.



CPU Temperature

Detects and displays the current CPU temperature.

System Temperature

Detects and displays the current system temperature.

CPU FAN Speed

Detects and displays the current CPU fan speed.

CPU: Vcore

Detects and displays the output voltages.

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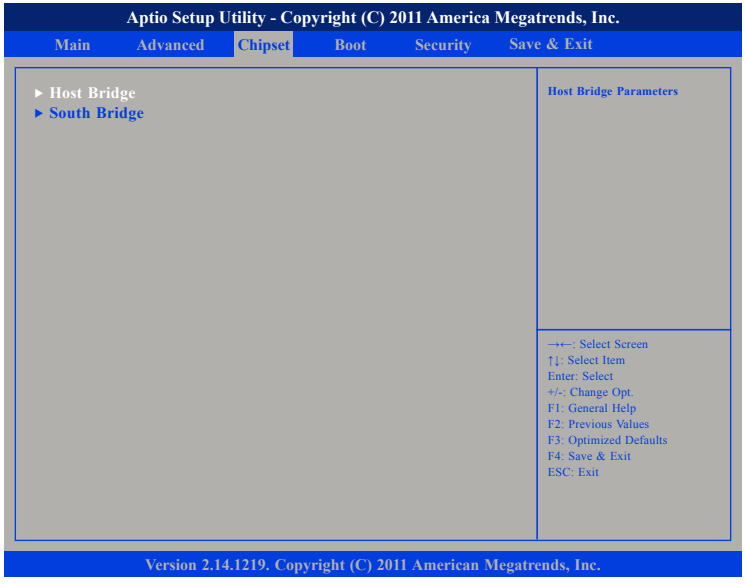
Chipset

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources.



Host Bridge

This section is used to configure the host bridge features.

Intel IGD Configuration

Configures the options for Intel IGD function.

Memory Information

Detects and displays information on the memory installed in the system.

South Bridge

This section is used to configure the south bridge features.

Azalia Controller
Enables or disables the Azalia HD audio.

SMBus Controller
Enables or disables the SMBus controller.

High Precision Timer
Enables or disables the high precision event timer.

Restore AC Power Loss

Power Off — When power returns after an AC power failure, the system's power is off. You must press the power button to power-on the system.

Power On — When power returns after an AC power failure, the system will automatically power-on.

Last State — When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

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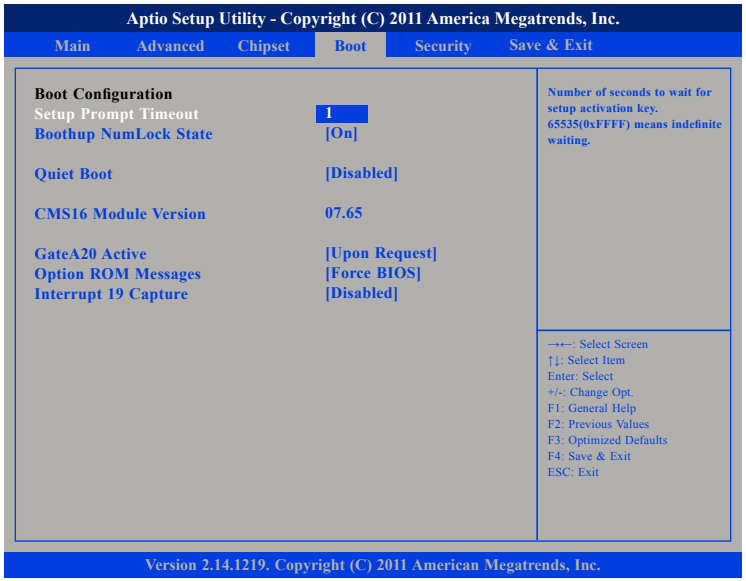
Boot

This section is used to configure the boot features.



Setup Prompt Timeout

Selects the number of seconds to wait for the setup activation key. 65535(0xFFFF) denotes indefinite waiting.

Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Quiet Boot

Enabled Displays OEM logo instead of the POST messages.
Disabled Displays normal POST messages.

Gate A20 Active

Upon Request GA20 can be disabled using BIOS services
Always Does not allow disabling GA20. This option is useful when an RT code is executed above 1M.

Option ROM Messages

Selects the display mode for Option ROM. The options are Force BIOS and Keep Current.

Interrupt 19 Capture

When enabled, it allows the optional ROM to trap interrupt 19.

Boot Option Priorities

Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth.

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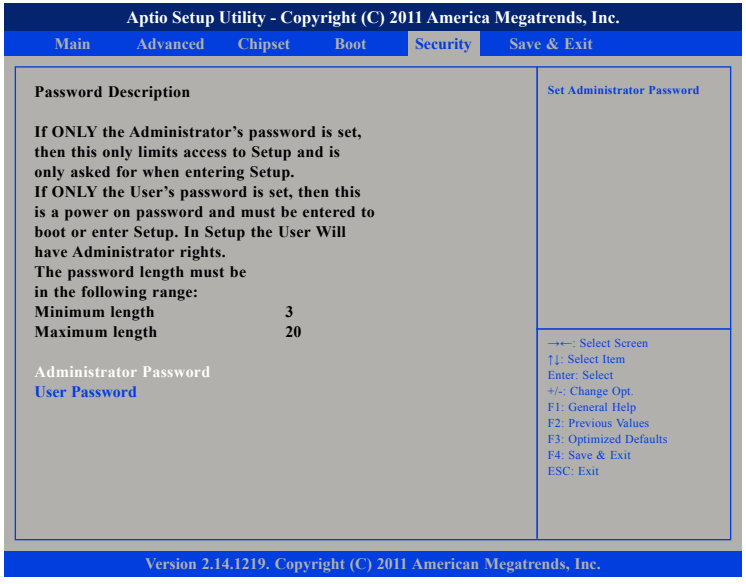
Security


Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Main
Advanced
Chipset
Boot
Security
Save & Exit
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User Will have Administrator rights.
The password length must be in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
Set Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Administrator Password
Select this to reconfigure the administrator's password.

User Password
Select this to reconfigure the user's password.

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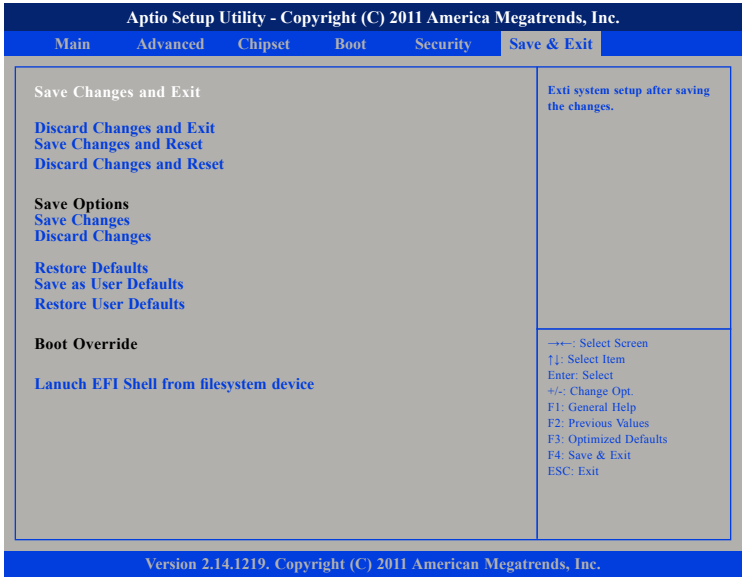
Save & Exit



Save Changes and Exit
To save the changes and exit the Setup utility, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes. You can also press <F4> to save and exit Setup.

Discard Changes and Exit
To exit the Setup utility without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting. You can also press <ESC> to exit without saving the changes.

Save Changes and Reset
To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Discard Changes and Reset
To exit the Setup utility without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

Save Changes
To save changes and continue configuring the BIOS, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Discard Changes
To discard the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes to discard all changes made and restore the previously saved settings.

Restore Defaults
To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Save as User Defaults
To use the current configurations as user default settings for the BIOS, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Restore User Defaults
To restore the BIOS to user default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecing Yes.

Boot Override
To bypass the boot sequence from the Boot Option List and boot from a particular device, select the desired device and press <Enter>.

Launch EFI Shell from filesystem device
To launch EFI shell from a filesystem device, select this field and press <Enter>.

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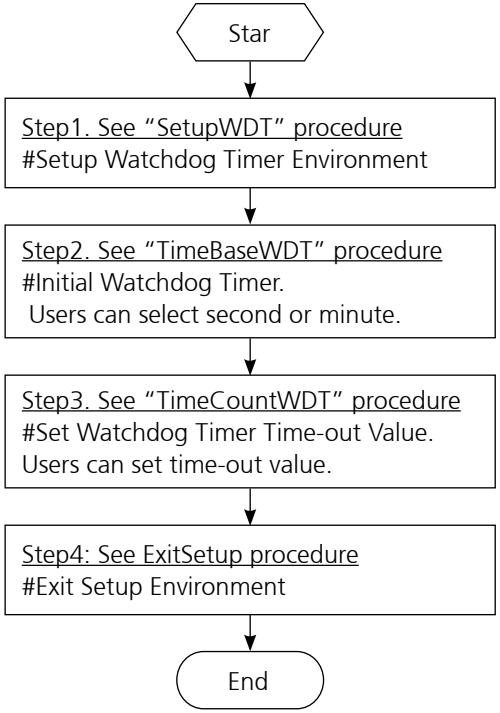
Appendix A: Watchdog Timer

WDT Programming Guide

EBC353 Watch Dog Function Configuration Sequence Description:



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```
;------------------------------------------------
SetupWDT        PROC
        mov     dx, 2eh
        mov     al, 087h
        out     dx, al
        nop
        nop
        mov     al, 01h
        out     dx, al
        nop
        nop
        mov     al, 55h
        out     dx, al
        nop
        nop
        out     dx, al          ;Write operations to special address port (2E) for entering MB PnP Mode.

        mov     al, 07h
        out     2eh, al
        mov     al, 07h ;Select logical device for Watch Dog.
        out     2fh, al
        ret
SetupWDT        ENDP

;------------------------------------------------
TimeBaseWDT             PROC
        mov     al, 72h
        out     2eh, al
        mov     al, 10h ;Set WDT reset upon PWROK
        or      al, 80h ;Here!! set 80h for second, set 00h for minute
        out     2fh, al
        ret
TimeBaseWDT     ENDP

;------------------------------------------------
TimeCountWDT    PROC
        mov     al, 73h ;WDT Time-out register.
        out     2eh, al
        mov     al, 03h ;Here!! Set count 3.
        out     2fh, al
        ret
TimeCountWDT    ENDP
;------------------------------------------------
ExitSetup        PROC
        mov     al, 02h
        out     2eh, al
        mov     al, 02h
        out     2fh, al
        ret
ExitSetup        ENDP
;------------------------------------------------
```


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Appendix B: GPI/O Programming Guide

EBC 353 GPIO

EBC353 Watch Dog Function Configuration Sequence Description:

PIN	Description	PIN	Description
1	+5V	2	GND
3	GPO24	4	GPI20
5	GPO25	6	GPI21
7	GPO26	8	GPI22
9	GPO27	10	GPI23

IO base address : A00h
Bit0 : GPI20
Bit1 : GP I21
Bit2 : GP I22
Bit3 : GP I23
Bit4 : GPO24
Bit5 : GPO25
Bit6 : GPO26
Bit7 : GPO27

1. Read/Write GPIO data by I/O port A04h

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